



VTrak G1100 Application and Performance Notes

Version 1.0

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Revision History

Revision	Date	Author	Description
0.69	10/20/14	Gary Fang	Initial Draft
1.0	11/5/2014	Victor Pacheco	Test Environment and Topology

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1. Scope

This document summarizes current performance test data of Promise VTrak G1100, as references for Product Marketing. This document will highlight real world video performance, Configurations, Topologies and also real world applications.

2. Executive Summary

- Single SMB client effective throughput (for video load) was between 400 ~ 500 MB/s.
- Dual node gateway cluster throughput was in the range of 1.5 ~ 1.8 times those of a single node gateway cluster, with an average of 1.65 times the performance of a single node.
- The max effective playback throughput for a single node gateway cluster was 1320 MB/s (multiple NAS connected clients).
- The max effective playback throughput for a dual node gateway cluster was 2360 MB/s (multiple NAS connected clients).

G1100 performance data is summarized in the following tables:

Table 1 – Single Node vs. Dual Node Playback Test Results (OSX 10.9.4)

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Playback		Data Rate MBs	Single Node	Dual Node
App	Load			
FCPX 10.1.3	PreRes4444 10bit QuadHD 3840x2160 @59.94fps .mov	290.6	3	5
	PreRes4444 10bit QuadHD 3840x2160 @50fps .mov	242.5	4	6
	PreRes4444 10bit QuadHD 3840x2160 @29.97fps .mov	145.4	7	12
	PreRes4444 10bit QuadHD 3840x2160 @23.98fps .mov	116.4	9	15
	Uncompressed 10bit 1920x1080@29.97fps .mov	160.3	7	11
	Uncompressed 10bit 1920x1080@23.97fps .mov	126.4	9	15
	ProRes 422 HQ (1080 @29.97fps) .mov	27.4	48/47*	78/86*
	DVCPro HD 1280x1080 @29.97fps	13.9	88/94*	141/151*

Notes:

- : Firmware package used: A3800f – 1.09.0000.45 / G1100 – 0.05.0000.37.

- : Drive configuration: WD RE4

*: ForcedReadAhead=disabled for A3800f.

Table 2 – Single Node vs. Dual Node Ingest Test Results (OSX 10.9.4)

Ingest		Data Rate MBs	Single Node	Dual Node
App	Load			
VTRX 5.2.2 FCP Studio 3	Uncompressed 8bit422 QuadHD 3840x2160 @23.98fps .mov	404	1	1*
	Uncompressed 10bit 1920x1080@29.97fps .mov	160.3	5^	5^
	Uncompressed 10bit 1920x1080@23.97fps .mov	126.4	5^	5^

Notes:

- : Firmware package used: A3800f – 1.09.0000.48 / G1100 – 0.05.0000.39.

- : Drive configuration: WD RE4.

^: Result limited by client, only 5 clients were used. Capture device (KONA 3G).

Table 3 – Single Node vs. Dual Node Ingest/Playback Test Results (OSX 10.9.4)

Ingest/playback		Data Rate MBs	Single Node (Ingest/Playback)	Dual Node (Ingest/Playback)
App	Load			
VTRX 5.2.2 FCP Studio 3	Uncompressed 10bit 1920x1080@29.97fps .mov	160.3	5/0 or 2/5	5/0 or 2/9
FPCX 10.1.3 Premiere Pro CS6.0.2	Uncompressed 10bit 1920x1080@23.97fps .mov	126.4	5/1 or 2/7	5/1 or 2/12

Notes:

- : Firmware package used: A3800f – 1.09.0000.48 / G1100 – 0.05.0000.39.

- : Drive configuration: WD RE4.

3. Test Purpose and Requirements

The purpose is to test the performance of Promise VTrak G1100 single node vs dual node cluster using A/V streaming loads.

3.1 General Test Configuration and Applications

Platform	Mac OSX 10.9.x
File System	A3800f VTrak FS
Topology	Fourteen 10Gbit NAS clients
Storage	VTrak A3800f with 3 J630s cascaded: G1100 release – various releases, up to build 0.05.0000.39 A3800f release – various releases, up to build 1.09.0000.48
Software	Apple Final Cut Pro - Studio 3 & Final Cut X (10.1.3) Adobe Premiere Pro - CS6.0.5 AJA VTR Xchange – 5.2.2
Video Formats	Uncompressed 10bit422 QuadHD 3840x2160 @59.94fps QuickTime media Uncompressed 10bit422 QuadHD 3840x2160 @50fps QuickTime media Uncompressed 10bit422 QuadHD 3840x2160 @29.97fps QuickTime media Uncompressed 10bit422 QuadHD 3840x2160 @23.98fps QuickTime media PreRes4444 10bit QuadHD 3840x2160 @59.94fps QuickTime media PreRes4444 10bit QuadHD 3840x2160 @50fps QuickTime media PreRes4444 10bit QuadHD 3840x2160 @29.97fps QuickTime media PreRes4444 10bit QuadHD 3840x2160 @23.98fps QuickTime media Uncompressed 10bit 1920x1080@29.97fps QuickTime media Uncompressed 10bit 1920x1080@23.97fps QuickTime media ProRes422 HQ (1080 @29.97fps) QuickTime media DVCPRO HD 1280x1080 @29.97fps Uncompressed 10bit QuadHD 3840x2160 @29.97fps DPX media (RGB) Uncompressed 10bit QuadHD 3840x2160 @23.98fps DPX media (RGB)
Media Workload	Playback Ingest Ingest & playback mixed

4. Test Environment & Topology

Table 1 – 10Gbit NAS Test Topology – Single Node Cluster

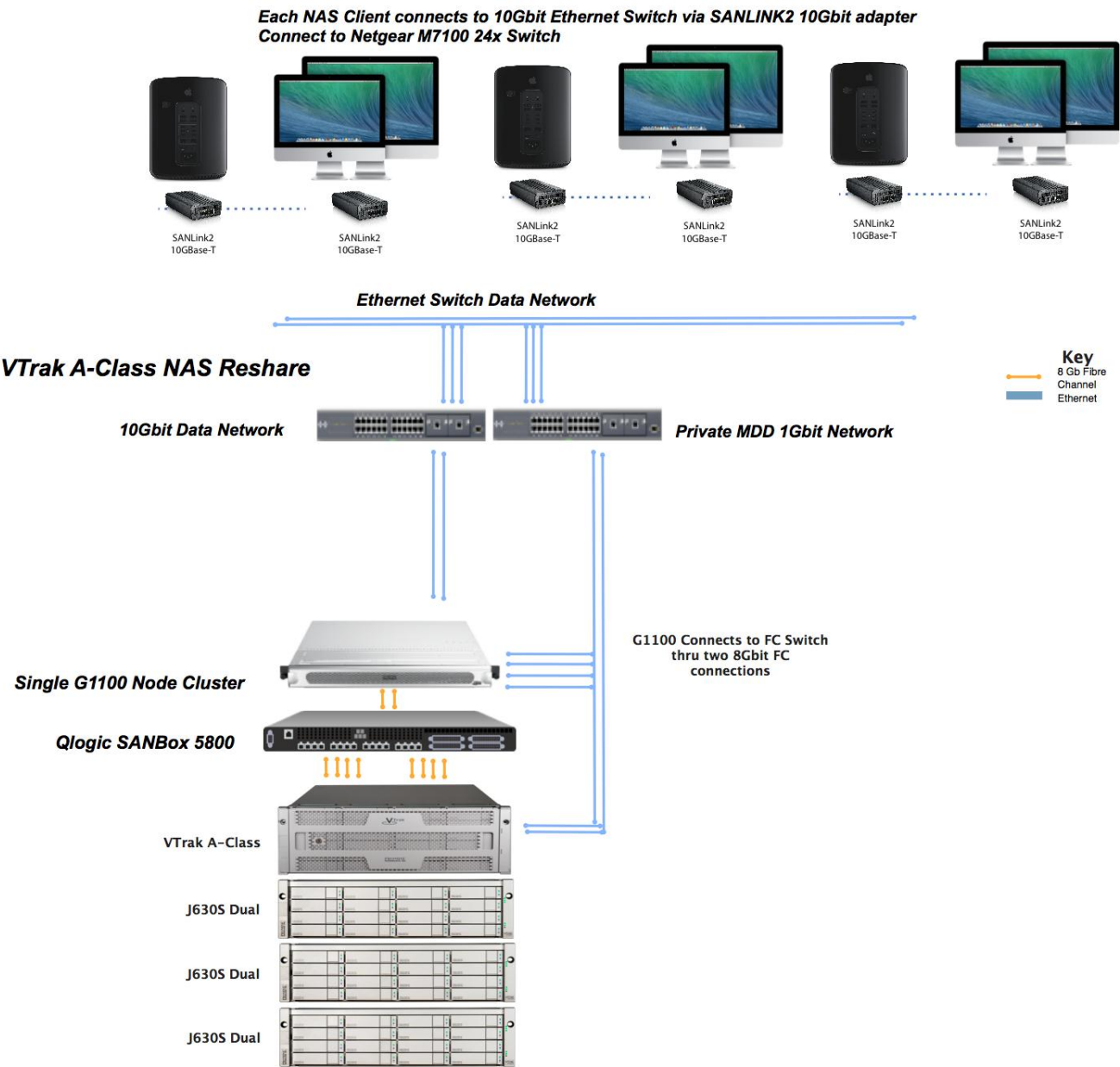
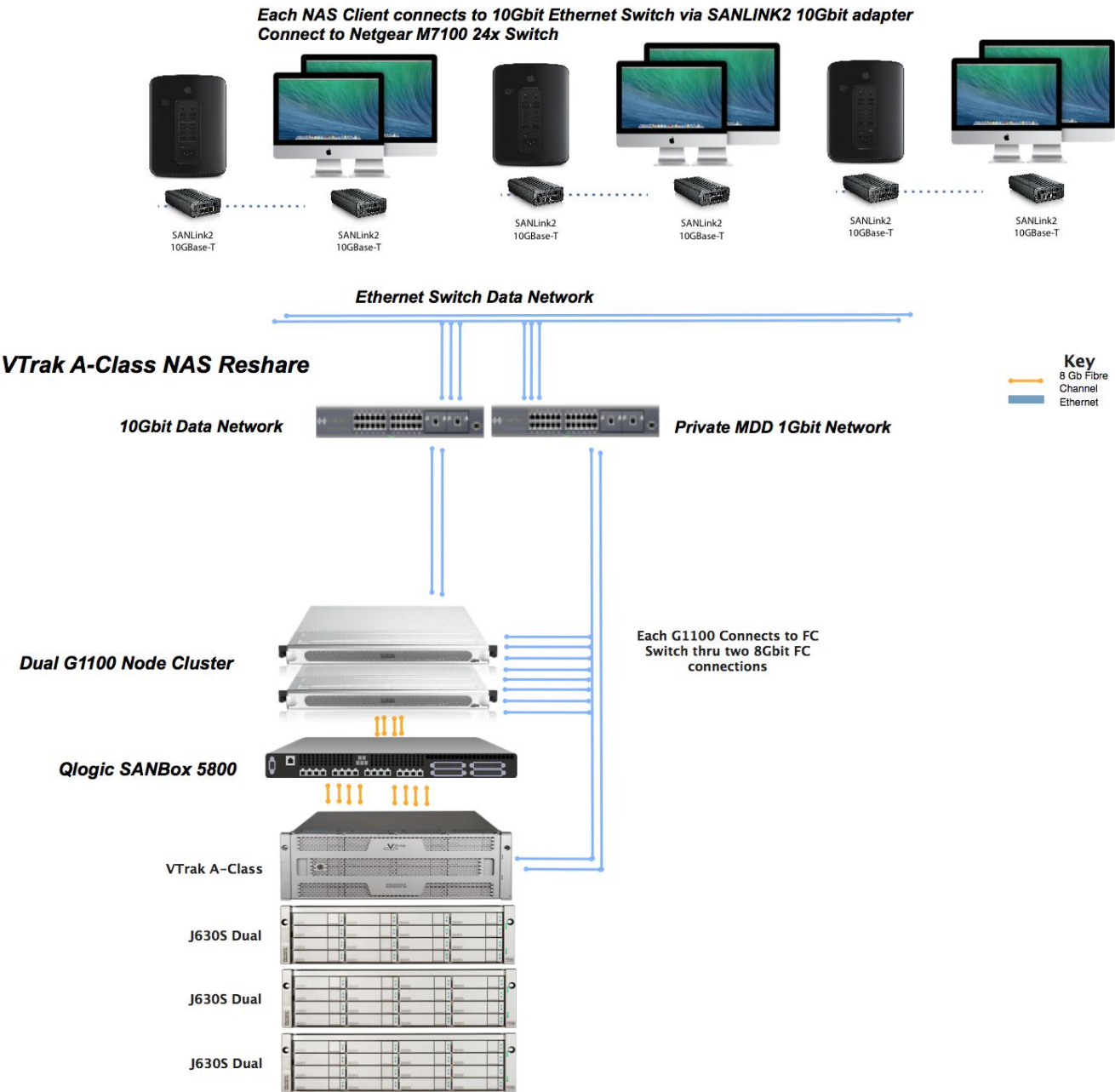


Table 2 – 10Gbit NAS Test Topology – Dual Node Cluster



5. Storage Configuration

- VTrak A-Class 3800: Dual controller, 8GB memory per controller, Active-Active, CacheMirroring enabled, LUNAffinity enabled, ALUA Enabled, ForcedReadAhead enabled unless otherwise noted, 1M stripe for data LUNs, and 64K meta data LUN.
- Drives: 72 Western Digital RE4 WDC2003FYYS (FW – 1D01) 2TB drives with disk read/write cache enabled
- Storage subsystem configuration

L0-MD&JD-R1	L0-MD&JD-R1	GHS	GHS
L1-D1-R5	L1-D1-R5	L2-D2-R5	L2-D2-R5
L1-D1-R5	L1-D1-R5	L2-D2-R5	L2-D2-R5
L1-D1-R5	L1-D1-R5	L2-D2-R5	L2-D2-R5
L1-D1-R5	L1-D1-R5	L2-D2-R5	L2-D2-R5
L9-S-R5	L9-S-R5	L9-S-R5	L9-S-R5

L3-D3-R5	L3-D3-R5	L4-D4-R5	L4-D4-R5
L3-D3-R5	L3-D3-R5	L4-D4-R5	L4-D4-R5
L3-D3-R5	L3-D3-R5	L4-D4-R5	L4-D4-R5
L3-D3-R5	L3-D3-R5	L4-D4-R5	L4-D4-R5

L5-D5-R5	L5-D5-R5	L6-D6-R5	L6-D6-R5
L5-D5-R5	L5-D5-R5	L6-D6-R5	L6-D6-R5
L5-D5-R5	L5-D5-R5	L6-D6-R5	L6-D6-R5
L5-D5-R5	L5-D5-R5	L6-D6-R5	L6-D6-R5

L7-D7-R5	L7-D7-R5	L8-D8-R5	L8-D8-R5
L7-D7-R5	L7-D7-R5	L8-D8-R5	L8-D8-R5
L7-D7-R5	L7-D7-R5	L8-D8-R5	L8-D8-R5
L7-D7-R5	L7-D7-R5	L8-D8-R5	L8-D8-R5

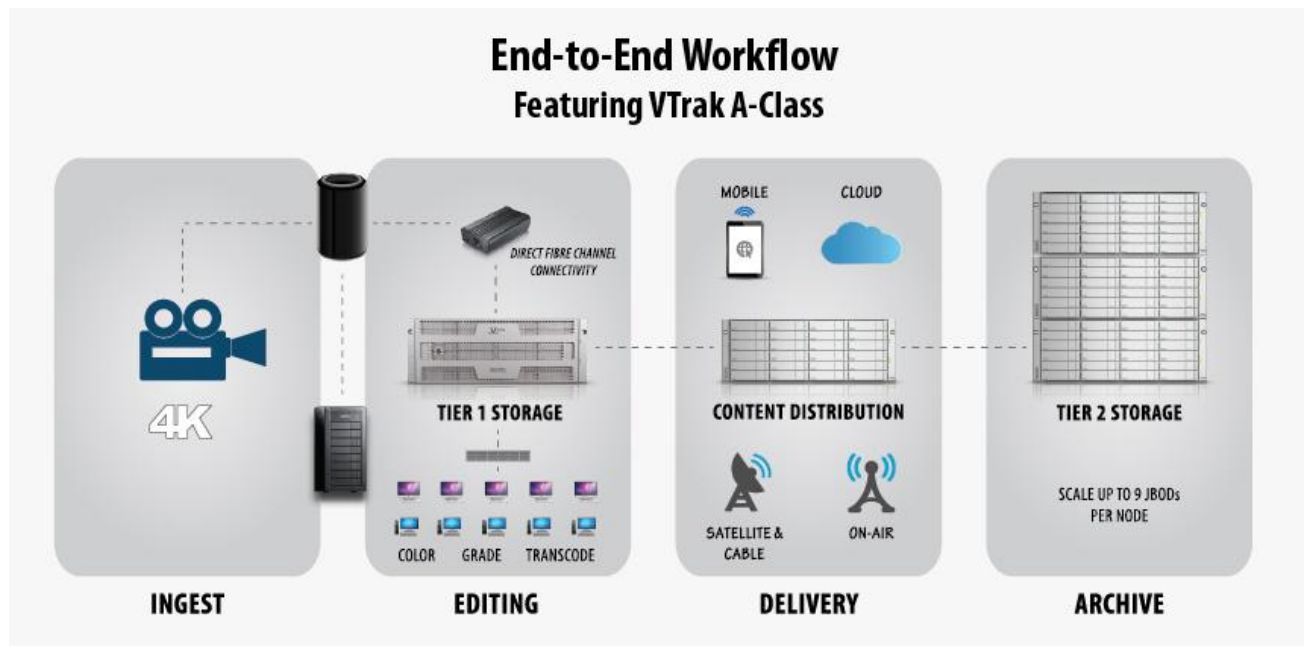
5.1 FC Switch Configuration

Qlogic Sanbox 5800, no active zoning

5.2 A/V Streaming Passing Criteria

No frame drop for ~1 hour streaming.

6. Typical Real World Application Implementation (Post Production & Broadcast)



Post Production:

- Post Production (ingest and media organization) [Apple Post Product Workflow Explained](#)
 - The first stage in any post-production pipeline is to ingest the film-originated, tape-based, or tapeless media files that you shot or generated into Final Cut Pro. Different types of media require different ingest methods; for example, ingesting from tape requires the Log and Capture window, and ingesting from a tapeless format requires the Log and Transfer window. Ingesting film-originated media, on the other hand, requires additional steps to develop the camera negative and transfer it to a video or image format that can be ingested into Final Cut Pro, sometimes with the help of Cinema Tools and Color. During ingest, you'll already be taking steps to organize your media by choosing what media to ingest and by adding logging information, such as clip names and notes. After ingest is complete, you immediately take other organizational steps to sort clips into bins and review, mark, and annotate each clip using controls in the Browser. Although most of this work takes place in Final Cut Pro, other applications may come into play during this part of the process. Transferred film may come into Final Cut Pro through a Cinema Tools database, which provides additional logging and tracking data from the film-transfer process. Multiple-suite post-production facilities may benefit from using Final Cut Server to manage project and media files on a storage area network (SAN) to facilitate projects worked on by a post-production team. There's one key decision that you make during ingest that affects editorial development, and later, finishing. This is whether to ingest your program's media at an offline resolution, where visual quality is lower but the media is easier to work with, or at an online resolution, where the visual quality is superior but the media requires more processing power to work with and more storage space.

➤ Edit

- Editorial development is when your project is put together. Sometimes referred to as the offline edit or the story edit, this is where the raw media that you ingested in stage 1 is turned into an edited program. Some programs are assembled entirely within Final Cut Pro, where you can create all the titles and effects you need and do any necessary sound design right in your sequence while you edit. However, don't forget that there are other applications in Final Cut Studio that you can turn to for specialized tasks. For example, you can create master templates in Motion for use as generators from within Final Cut Pro, or you can use Motion to create broadcast graphics and composites that you can then edit into the Final Cut Pro Timeline. As you work, you can also send specific audio clips from the Final Cut Pro Timeline directly to Soundtrack Pro to do things like eliminate noise, create ambient noise to patch holes, and do equalization matching on a clip-by-clip basis. Whether you use one application or many, all of a program's elements come together in your edited sequence, helping to guide your editorial decisions as you work to complete the program's content.

➤ Content Review

- If you're working on a project for a client, frequent and specific feedback is an absolute requirement. If you're working in a supervised session, you can simply play your project from the Final Cut Pro Timeline. However, there are times when you may be working unsupervised, with clients who are remotely located, or when you want to provide a version of the program that can be screened at another location. Final Cut Studio provides many ways of delivering individual clips or entire sequences to clients for remote viewing, such as via a QuickTime movie or DVD, on the web, or even interactively in iChat.

➤ Finishing

- After a program's story has been edited and the project's content is considered complete, it's time to give the program its final polish and tweaking, appropriately referred to as finishing. The first part of finishing, if you've been working on your project using offline-quality media, is to conform your edited sequence to the highest-quality version of the original source media that's available. The best way to do this depends on how the original media was acquired, how you ingested the media, and how carefully you managed the media during editorial development. If your offline edit combines source media in several different formats, now may be the time to convert any clips that don't match the final sequence settings so that the entire program is easy to output. Compressor has format-conversion capabilities that facilitate this process. This is also the time when all temporary elements like placeholder titles, offline effects, and other placeholder media must be replaced with their final, online-quality versions. As always, these elements can be created inside of Final Cut Pro or in conjunction with Motion. Lastly, once your sequence has been carefully reconfirmed and prepared, your program is ready for color correction and the final sound mix. Final Cut Studio has dedicated applications for each of these tasks, appropriately named Color and Soundtrack Pro.

➤ Mastering

- Mastering is the process of assembling everything your project needs into a single, deliverable bundle for handoff. In some cases, this process is as simple as making sure that the video and audio elements are assembled into a final sequence for output to tape. In other cases, mastering may involve assembling a much longer list of deliverable media files, including separate versions of the program with and without titles (also called texted and textless versions), format conversions, closed captioning and subtitle insertion, and alternative audio mixes for different audiences.

➤ Output and Delivery

- Output and delivery is the last stage of the post-production process. As the name implies, it's the process of creating the final, playable media that you then hand off to the client and audience. Output can take many forms: rendering a DPX image sequence for film printing, outputting to an appropriately high-quality tape format, creating a DVD, or compressing your program to a format suitable for web playback.

Broadcast workflow:

➤ Ingest and play out feeds via Video Router

- Tape
- Studio
- Satellite

➤ Ingesting & Live Logging

- Ingest Control, Preview & Meta Data Entry

➤ Edit

- Craft Editor Integration
- Proxy Editor
- News Editor
- Edit Volume VTrak A-Class storage connected via Ethernet connected NAS Clients or Fiber Connected clients
- Play Out Volume VTrak A-Class storage connected via Ethernet connected NAS Clients or Fiber Connected clients

➤ Archive

- Disk to Disk (VTrak storage) to tape